

WHAT IS CLAIMED IS:

1. A shaft having a shank with a splined portion that is spline engaged with a fitting member, and with an external diameter portion that is formed with a distance of separation from the splined portion, both the splined portion and the external diameter portion being formed in an outer peripheral surface of the shank, comprising:

any one of a curved portion, a plurality of curved portions, and a plurality of curved portions and at least one straight portion, that extend continuously so as to connect a cut back portion formed at an end portion of a groove portion of the splined portion and the external diameter portion.

2. The shaft according to claim 1, further comprising:

a large diameter portion which has a diameter that is larger than a diameter of an external periphery of the splined portion and which is formed at an end portion of the external diameter portion at the splined portion side; and

a tapered portion which stops the fitting member and which is provided at a side surface of the large diameter portion at the splined portion side.

3. The shaft according to claim 2, wherein an end portion at the external diameter portion side of the curved portion is formed so as to be further from a shaft axis of the shank than the cut back portion.

4. The shaft according to claim 1, wherein two of the curved portion are provided.

5. The shaft according to claim 2, wherein two of the curved portion are provided.

6. The shaft according to claim 3, wherein two of the curved portion are provided.

7. The shaft according to claim 1, wherein two of the straight portion are provided.

8. The shaft according to claim 2, wherein two of the straight portion are provided.

5 9. The shaft according to claim 3, wherein two of the straight portion are provided.

10. A manufacturing method for manufacturing the shaft as in claim 1, comprising the steps of:

10 forming the splined portion with a predetermined shape by cold forging, machining and component rolling;
forming the curved portion by component rolling; and
conducting quenching.

15 11. A manufacturing method for manufacturing the shaft as in claim 2, comprising the steps of:

forming the splined portion with a predetermined shape by cold forging, machining and component rolling;
forming the curved portion by component rolling; and
20 conducting quenching.

12. A manufacturing method for manufacturing the shaft as in claim 3, comprising the steps of:

25 forming the splined portion with a predetermined shape by cold forging, machining and component rolling;
forming the curved portion by component rolling; and
conducting quenching.

30 13. A manufacturing method for manufacturing the shaft as in claim 4, comprising the steps of:

forming the splined portion with a predetermined shape by cold forging, machining and component rolling;
forming the curved portion by component rolling; and
conducting quenching.

14. A manufacturing method for manufacturing the shaft as in claim 5, comprising the steps of:

5 forming the splined portion with a predetermined shape by cold forging, machining and component rolling;
forming the curved portion by component rolling; and
conducting quenching.

10 15. A manufacturing method for manufacturing the shaft as in claim 6, comprising the steps of:

forming the splined portion with a predetermined shape by cold forging, machining and component rolling;
forming the curved portion by component rolling; and
conducting quenching.

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16. A manufacturing method for manufacturing the shaft as in claim 7, comprising the steps of:

forming the splined portion with a predetermined shape by cold forging, machining and component rolling;
20 forming the curved portion by component rolling; and
conducting quenching.

17. A manufacturing method for manufacturing the shaft as in claim 8, comprising the steps of:

25 forming the splined portion with a predetermined shape by cold forging, machining and component rolling;
forming the curved portion by component rolling; and
conducting quenching.

30 18. A manufacturing method for manufacturing the shaft as in claim 9, comprising the steps of:

forming the splined portion with a predetermined shape by cold forging, machining and component rolling;
forming the curved portion by component rolling; and

conducting quenching.

19. The manufacturing method for the shaft according to claim 10, further comprising the step of:

5 conducting shot peening of the shaft.